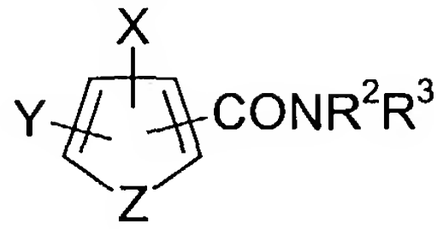
CLAIMS

1. A compound of the formula



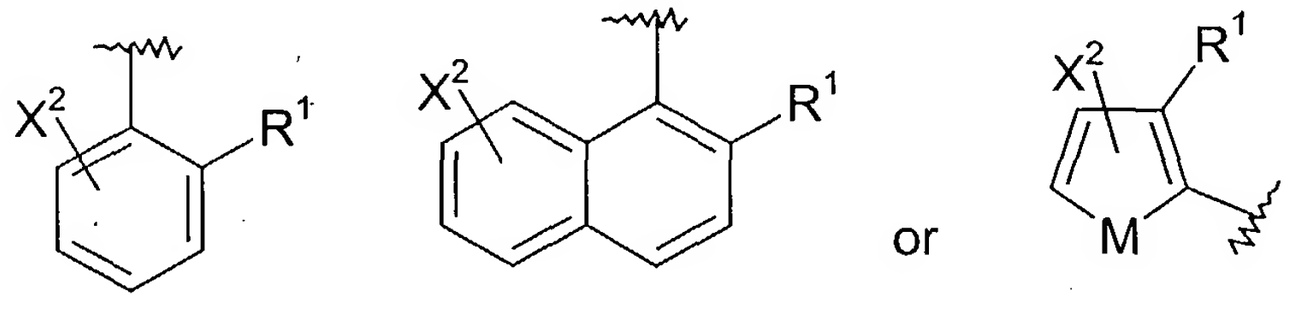
(I)

or the pharmaceutically acceptable salt thereof; wherein

Z is oxygen, $S(O)_m$ wherein m is 0, 1 or 2; or NQ wherein Q is hydrogen, $(C_1\text{-}C_6)$alkyl or phenyl;

X is hydrogen, chloro, fluoro, bromo, iodo, hydroxy, nitro, cyano, $(C_1\text{-}C_6)$alkyl, trifluoromethyl, $(C_1\text{-}C_6)$alkoxy, $(C_1\text{-}C_6)$alkyl $S(O)_a$ wherein a is 0, 1 or 2; or phenyl wherein the phenyl group is optionally substituted by hydrogen, halo, hydroxy, nitro, cyano, $(C_1\text{-}C_6)$alkyl, trifluoromethyl, $(C_1\text{-}C_6)$alkoxy, or $(C_1\text{-}C_6)$alkyl $S(O)_b$ wherein b is 0, 1 or 2;

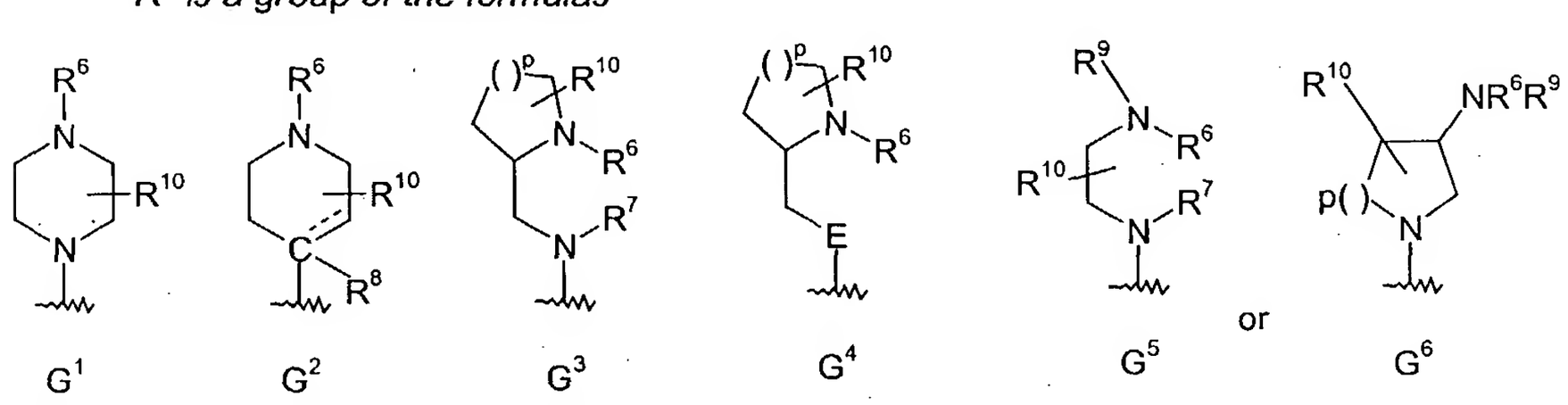
Y is



wherein M is oxygen or sulfur;

X^2 is hydrogen, fluoro, chloro, trifluoromethyl, $(C_1\text{-}C_6)$alkyl, $(C_1\text{-}C_6)$alkoxy or $(C_1\text{-}C_6)$alkyl $S(O)_c$ wherein c is 0, 1 or 2;

R^1 is a group of the formulas



wherein the broken line represents an optional double bond;

p is 1, 2 or 3;

E is oxygen or $S(O)_d$ wherein d is 0, 1 or 2;

R^6 is selected from the group consisting of hydrogen, $(C_1\text{-}C_6)$alkyl optionally substituted with $(C_1\text{-}C_6)$alkoxy or one to three fluorine atoms, or [$(C_1\text{-}C_4)$alkyl]aryl wherein the aryl moiety is phenyl, naphthyl, or heteroaryl-$(CH_2)_q$-, wherein the heteroaryl moiety is selected from the group consisting of pyridyl, pyrimidyl, benzoxazolyl, benzothiazolyl, benzisoxazolyl and benzisothiazolyl and q is zero, one, two, three or four, and wherein said aryl and heteroaryl moieties may

optionally be substituted with one or more substituents independently selected from the group consisting of chloro, fluoro, bromo, iodo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, trifluoromethyl, cyano and $(C_1$-$C_6)$alkyl$S(O)_e$, wherein e is 0, 1 or 2;

R^7 is selected from the group consisting of hydrogen, $(C_1$-$C_6)$alkyl, $[(C_1$-$C_4)$alkyl]aryl wherein the aryl moiety is phenyl, naphthyl, or heteroaryl-$(CH_2)_r$-, wherein the heteroaryl moiety is selected from the group consisting of pyridyl, pyrimidyl, benzoxazolyl, benzothiazolyl, benzisoxazolyl and benzisothiazolyl and r is zero, one, two, three or four, and wherein said aryl and heteroaryl moieties may optionally be substituted with one or more substituents independently selected from the group consisting of chloro, fluoro, bromo, iodo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, trifluoromethyl, -C(=O)-$(C_1$-$C_6)$alkyl, cyano and $(C_1$-$C_6)$alkyl$S(O)_f$, wherein f is 0, 1 or 2;

or R^6 and R^7 taken together form a 2 to 4 carbon chain;

R^8 is hydrogen or $(C_1$-$C_3)$alkyl;

R^9 is hydrogen or $(C_1$-$C_6)$alkyl;

or R^6 and R^9, together with the nitrogen atom to which they are attached, form a 5 to 7 membered heteroalkyl ring that may contain from zero to four heteroatoms selected from nitrogen, sulfur and oxygen;

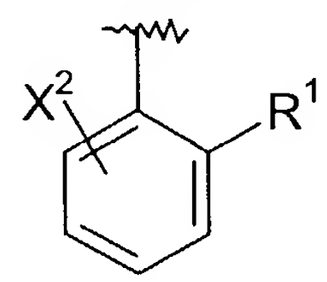
R^{10} is hydrogen or $(C_1$-$C_6)$alkyl;

R^2 is hydrogen, $(C_1$-$C_4)$alkyl, phenyl or naphthyl, wherein said phenyl or naphthyl may optionally be substituted with one or more substituents independently selected from chloro, fluoro, bromo, iodo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, trifluoromethyl, cyano and $(C_1$-$C_6)$alkyl$S(O)_g$ wherein g is 0, 1 or 2; and

R^3 is -$(CH_2)_t$B, wherein t is zero, one, two or three and B is hydrogen, phenyl, naphthyl or a 5 or 6 membered heteroaryl group containing from one to four heteroatoms in the ring, and wherein each of the foregoing phenyl, naphthyl and heteroaryl groups may optionally be substituted with one or more substituents independently selected from chloro, fluoro, bromo, iodo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$ alkoxy-$(C_1$-$C_6)$alkyl-, trifluoromethyl, trifluoromethoxy, cyano, hydroxy, COOH and $(C_1$-$C_6)$alkyl$S(O)_h$ wherein h is 0, 1 or 2.

2. A compound according to claim 1, wherein Z is oxygen, $S(O)_m$ wherein m is zero; or NH.

3. A compound according to claim 1, wherein Y is a group of the formula

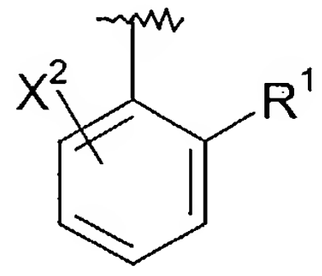


wherein R^1 is 4-methylpiperazin-1-yl and X^2 is hydrogen, fluoro or chloro.

4. A compound according to claim 1, wherein R^2 is hydrogen or $(C_1$-$C_4)$alkyl and X^2 is hydrogen, fluoro or chloro.

5. A compound according to claim 1, wherein R^3 is $-(CH_2)_tB$ wherein t is zero or one and B is phenyl or naphthyl wherein the phenyl and naphthyl groups may optionally be substituted with one or more substituents independently selected from chloro, fluoro, bromo, iodo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$ alkoxy-$(C_1$-$C_6)$alkyl-, trifluoromethyl, trifluoromethoxy, cyano, hydroxy, COOH and $(C_1$-$C_6)$alkyl$S(O)_h$ wherein h is 0, 1 or 2.

6. A compound according to claim 1, wherein Z is oxygen, $S(O)_m$ wherein m is zero; or NH; Y is a group of the formula



wherein R^1 is 4-methylpiperazin-1-yl and X^2 is hydrogen, fluoro or chloro; R^2 is hydrogen, or $(C_1$-$C_4)$alkyl; and R^3 is $-(CH_2)_tB$ wherein t is zero or one and B is phenyl or naphthyl wherein the phenyl and naphthyl groups may optionally be substituted with one or more substituents independently selected from chloro, fluoro, bromo, iodo, $(C_1$-$C_6)$alkyl, $(C_1$-$C_6)$alkoxy, $(C_1$-$C_6)$ alkoxy-$(C_1$-$C_6)$alkyl-, trifluoromethyl, trifluoromethoxy, cyano, hydroxy, COOH and $(C_1$-$C_6)$alkyl$S(O)_h$ wherein h is 0, 1 or 2.

7. A compound of claim 1, wherein the compound is selected from the group consisting of:

5-[2-(4-methylpiperazin-1-yl)-phenyl]-furan-2-carboxylic acid 4-chlorobenzylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-furan-2-carboxylic acid 4-chlorophenylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid 4-chlorophenylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid 4-chlorobenzyl-amide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-furan-2-carboxylic acid [2-(4-chlorophenyl)ethyl]-amide;

4-[2-(4-methylpiperazin-1-yl)-phenyl]-furan-2-carboxylic acid 4-chlorobenzylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid benzylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid 4-fluorobenzylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid 4-methoxybenzylamide;

5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid [2-(4-chlorophenyl)ethyl]-amide;

3-methyl-5-[2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid 4-chlorobenzylamide;

5-[5-fluoro-2-(4-methylpiperazin-1-yl)-phenyl]-thiophene-2-carboxylic acid 4-chlorobenzylamide; and

5-[2-(4-methylpiperazin-1-yl)-phenyl]-1H-pyrrole-2-carboxylic acid 4-chlorobenzylamide.

8. A pharmaceutical composition for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, premature ejaculation, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising an amount of a compound according to claim 1 that is effective in treating or preventing such disorder or condition and a pharmaceutically acceptable carrier.

9. A pharmaceutical composition for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising an amount of a compound according to claim 1 that is effective in treating or preventing such disorder or condition and a pharmaceutically acceptable carrier.

10. A method for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, premature ejaculation, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising administering to a mammal in need of such treatment or prevention an amount of a compound according to claim 1 that is effective in treating or preventing such disorder or condition.

11. A method for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising administering to a mammal in need of such treatment or prevention an amount of a compound according to claim 1 that is effective in treating or preventing such disorder or condition.

12. A pharmaceutical composition for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, premature ejaculation, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-

compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising a serotonin receptor antagonizing or agonizing effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

13. A pharmaceutical composition for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising a serotonin receptor antagonizing or agonizing effective amount of a compound of according to claim 1 and a pharmaceutically acceptable carrier.

14. A method for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, sexual dysfunction, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising administering to a mammal requiring such treatment or prevention a serotonin receptor antagonizing or agonizing effective amount of a compound according to claim 1.

15. A method for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising administering to a mammal requiring such treatment or prevention a serotonin receptor antagonizing or agonizing effective amount of a compound according to claim 1.

16. A pharmaceutical composition for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising:

a) a pharmaceutically acceptable carrier;

b) a compound of according to claim 1; and

c) a 5-HT re-uptake inhibitor or a pharmaceutically acceptable salt thereof;

wherein the amount of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.

17. A method for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising administering to a mammal requiring such treatment or prevention:

a) a compound according to claim 1 ; and

b) a 5-HT re-uptake inhibitor or a pharmaceutically acceptable salt thereof;

wherein the amounts of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.

18. A pharmaceutical composition according to claim 20, wherein the 5-HT re-uptake inhibitor is sertraline or a pharmaceutically acceptable salt thereof.

19. A method according to claim 21, wherein the 5-HT re-uptake inhibitor is sertraline or a pharmaceutically acceptable salt thereof.

20. A method for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, sexual dysfunction, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising administering to a mammal requiring such treatment or prevention:

a) a compound according to claim 1 ; and

b) a 5-HT re-uptake inhibitor or a pharmaceutically acceptable salt thereof;

wherein the amounts of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.

21. A method for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising administering to said mammal requiring such treatment or prevention:

a) a 5-HT_{1A} antagonist or a pharmaceutically acceptable salt thereof; and

b) a 5-HT_{1D} antagonist compound according to claim 1 or a pharmaceutically acceptable salt thereof;

wherein the amounts of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.

22. A method for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, sexual dysfunction, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising administering to a mammal requiring such treatment or prevention:

a) a 5-HT_{1A} antagonist or a pharmaceutically acceptable salt thereof; and

b) a 5-HT_{1D} antagonist compound according to claim 1 or a pharmaceutically acceptable salt thereof;

wherein the amounts of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.

23. A pharmaceutical composition for treating or preventing a disorder or condition that can be treated or prevented by enhancing serotonergic neurotransmission in a mammal, comprising:

a) a 5-HT_{1A} antagonist or a pharmaceutically acceptable salt thereof; and

b) a 5-HT_{1D} antagonist compound according to claim 1 or a pharmaceutically acceptable salt thereof;

wherein the amounts of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.

24. A pharmaceutical composition for treating or preventing a disorder or condition selected from hypertension, depression, generalized anxiety disorder, phobias, posttraumatic stress syndrome, avoidant personality disorder, sexual dysfunction, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, cancer, chronic paroxysmal hemicrania and headache in a mammal, comprising:

a) a 5-HT_{1A} antagonist or a pharmaceutically acceptable salt thereof; and

b) a 5-HT_{1D} antagonist compound according to claim 1 or a pharmaceutically acceptable salt thereof;

wherein the amounts of the active compounds are such that the combination is effective in treating or preventing such disorder or condition.